ASSESSING ASBESTOS-RELATED RISK: NEW THINKING/ NEW PROTOCOL

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To assess risk, it is typically necessary to combine an exposure estimate from an environment of interest with a dose-response coefficient derived from an unrelated environment using a model (and dose-response coefficient) that is appropriate for the disease end point of interest.   Unfortunately, the dose-response coefficients that have been published for asbestos vary by more than a factor of 500 for lung cancer and more than a factor of 1000 for mesothelioma, the two disease end points of principal concern for environmental asbestos exposures. Given this apparent variation, the validity of applying these coefficients to predict risk must be given due consideration.

The observed disparity in published dose-response coefficients for asbestos has been variously attributed to differing mineralogy (which affects surface chemistry and biopersistence), differing fiber size and shape, and (in a few cases) special exposure circumstances that are unique to a particular environment. The traditional approach for measuring asbestos is not sensitive to these distinctions so that their effects potentially contribute to the observed variation in dose-response coefficients. Moreover, the dose-response coefficients traditionally recommended for asbestos are single values (one each for lung cancer and mesothelioma) selected within the ranges reported among the published studies without regard to the effects of mineralogy, fiber size and shape, or the need to consider cross-study predictability.

This poster presents an alternate approach for assessing asbestos-related risk that incorporates improved methods for characterizing asbestos exposure concentrations combined with identification of an adjusted set of dose-response coefficients that better reflect the effects of mineralogy and fiber size and shape. An evaluation of cross-study predictability is also presented along with consideration of the potential magnitude of the error in the risk estimates that are derived using this new approach.